# MTRX3700 – Team CASSIA – User interface

Michael, 21/9

## Start-up behavior

* Simple. Just has to initialize settings to defaults (see next step), and then go to USER mode.

## Default operating mode and parameter settings

* As specified, default mode is USER. After startup routine, go to USER menu. If no input received after 30 seconds, go to USER\_LOCAL automatically.
* Default settings:
  + SAMPLES\_PER\_MEASUREMENT = 100 (arbitrary? can change)
  + TARE\_VALUE = 0 – must be zero at first, then updated later if user requires
  + WEIGHT\_SETTING = grams
  + May need others, e.g. initial CALIBRATION\_GRADIENT, but will need to experimentally determine these.

## Input sequences and menus

* Shaped by **hardware, software and user mode requirements**
* Must be able to be activated not only by the remote-mode serial hardware (which is very flexible), but by the more constrained local-mode keypad + LCD + speaker setup
  + Menus must have simple commands so keypad can activate them
  + Output to LCD menu must be simple text to fit in limited display region
  + Output to speaker must be simple so user doesn’t have to recall too many options
  + Output to serial menu can be more complex, but should be usable
* Want maximum **reusability between the local and remote modes**
  + Since keypad commands will be numbers 1-9, serial terminal menu will also ask for these to select options, rather than using letter commands etc.
  + Must be able to switch between local and remote modes even halfway through an operation (e.g. the COUNT sequence); data and interface should be separate, so that program can keep data obtained so far, and just switch to new interface mode
* Options at each step governed by the state transition diagram.
* **Consistency** in options – # key always means cancel / go back a step. In multi-step sequences (e.g. COUNT), the # key’s cancelling behavior must adapt to different context (i.e. whether to go back to last step of COUNT sequence, or exit COUNT mode altogether), depending on what is most appropriate.
* Because of the global settings bucket concept, some global options need to be always accessible. The number of such options that can be accommodated is constrained by the **keypad** only providing 10 numbers. However, this is OK since we don’t have too many.
  + Options chosen so that most all USER commands are most easily accessed, with extra FACTORY menu choices filling up later.
  + 1, 2, 6, 7, 8, 9: Menu choices, can change at each menu
  + 3: Tare to current weight value
  + 4: Change unit of measurement (Gram ↔ Ounce)
  + 5: Mute / un-mute speaker
  + 0: Switch between user and factory modes (with confirmation of factory mode entry)
  + #: Cancel / go back a step / go up a menu level
  + \* : OK / Confirm data, especially when numerical entry needed (e.g. COUNT mode)
* **Feedback** is important. e.g. when TARE is requested, will output “TARE – zero point reset” etc, so that user knows why the display has suddenly changed.
* **Error handling** will be needed. All modes on diagram should be considered to branch to an appropriate error message display if unrecognized input is received.
* Program will also **exit** after 2 minutes of no user input – so menu would be erased, goodbye message displayed, then power off after 5 seconds.